

# Exploratory Spatial Analyses of Sexual Assaults in Anchorage

**André B. Rosay and Robert H. Langworthy**

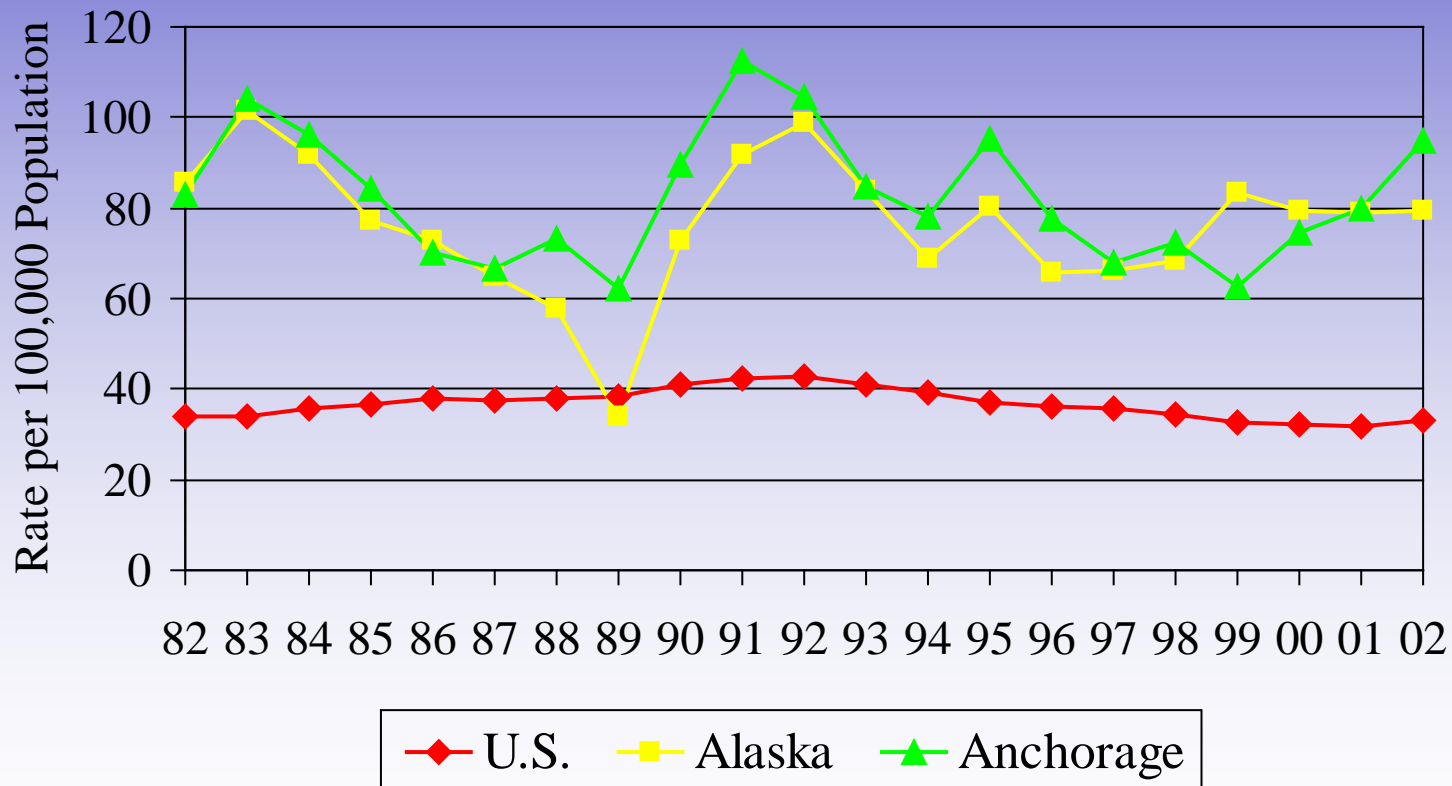
Justice Center, University of Alaska



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We thank the Anchorage Police Department for their assistance.

# Rates of Forcible Rape in U.S., Alaska, and Anchorage



Source: Crime in the United States, 1982 to 2002

# Descriptive Analysis of Sexual Assaults in Anchorage

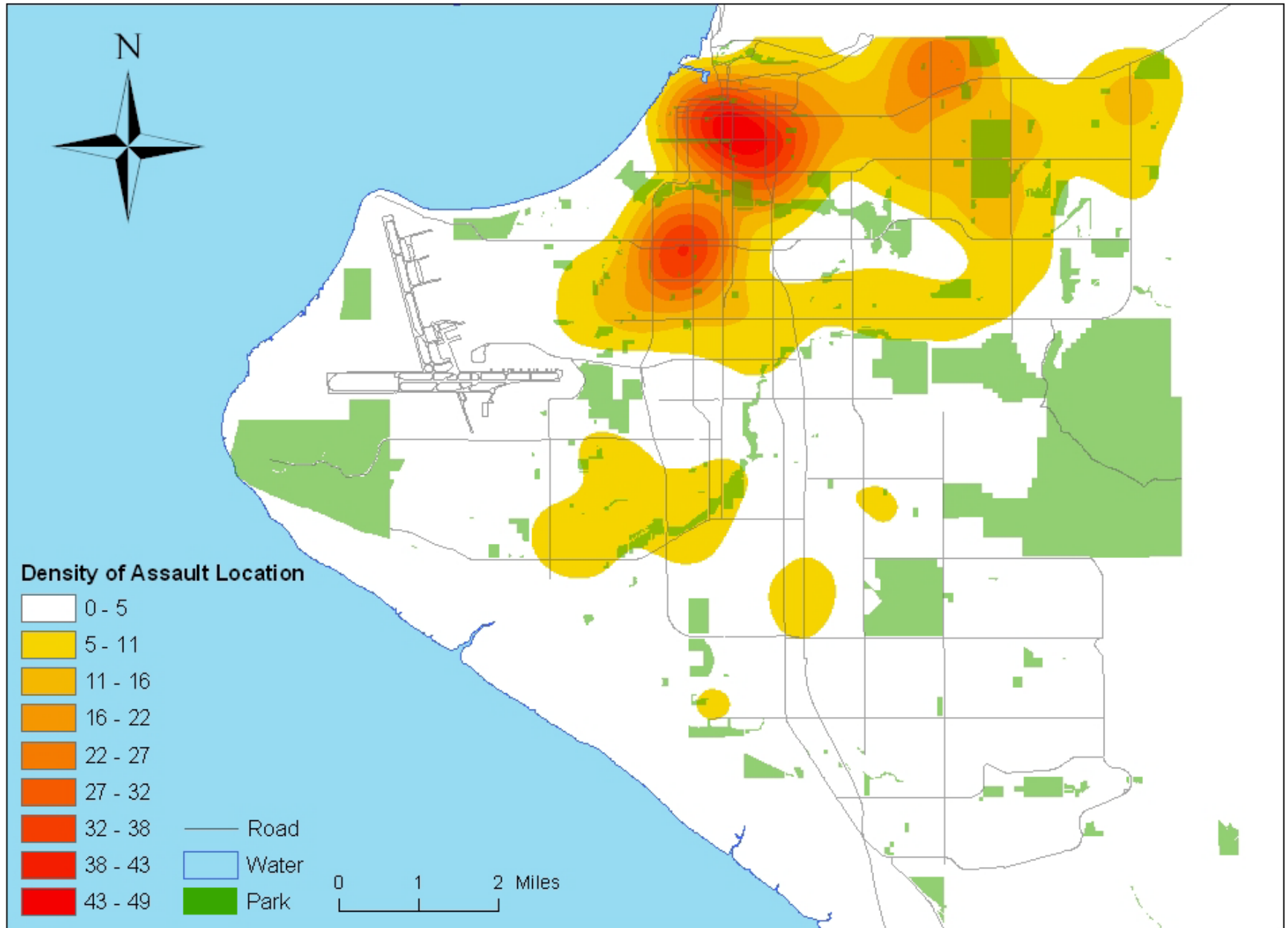
- 541 police reports of sexual assaults in 2000 and 2001
  - Collected over 200 variables
  - Includes detailed information on pick-up locations, assault locations, drop-off locations, and report locations
  - Report available at <http://www.uaa.alaska.edu/just>
- 
- For this presentation, focus on assault locations (N=585)
  - 536 (91.6%) were known
  - 428 (79.8% of known) were successfully geocoded

# **Presentation Outline**

## **Part I – Sexual Assault Maps**

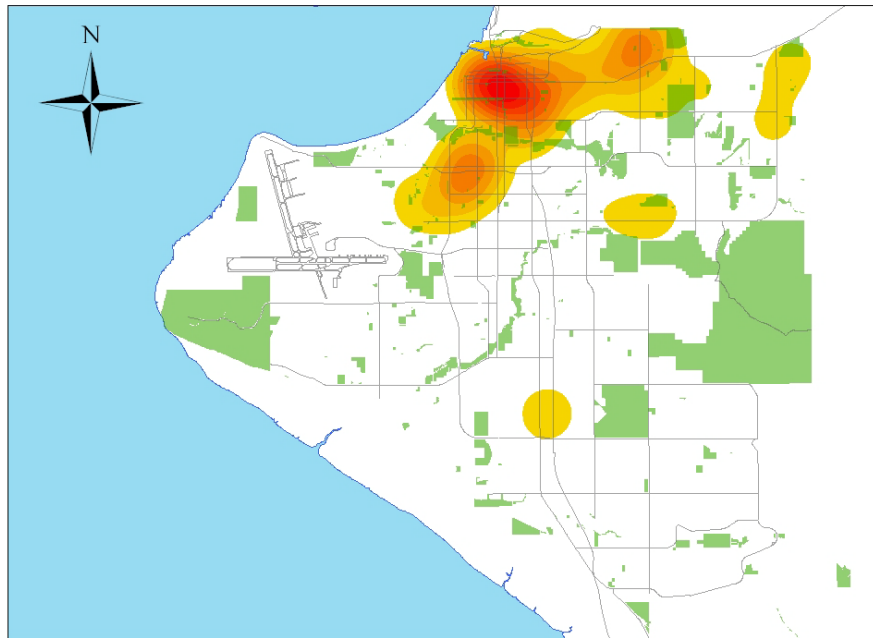
- **Sexual assault densities**
- **Sexual assault densities by race, age, relationship, and alcohol use**
- **Sexual assault densities and bar locations**
- **Policy implications**

# Density of Sexual Assault Locations in Anchorage: 2000-2001



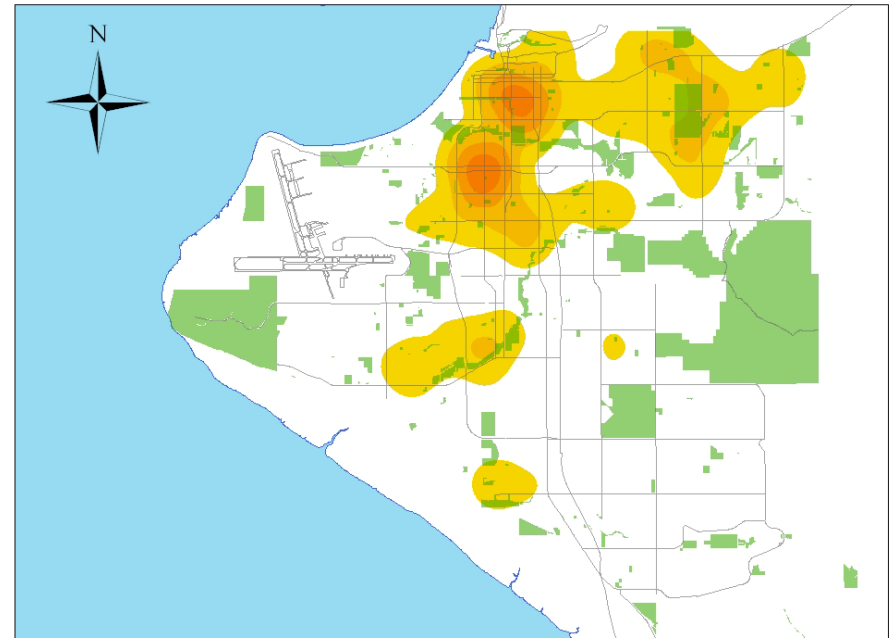
# Sexual Assault Densities by Race

NATIVE

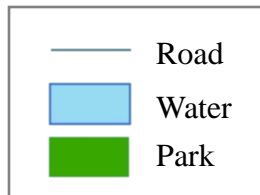


N=179

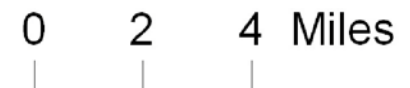
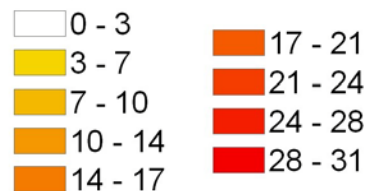
WHITE



N=191



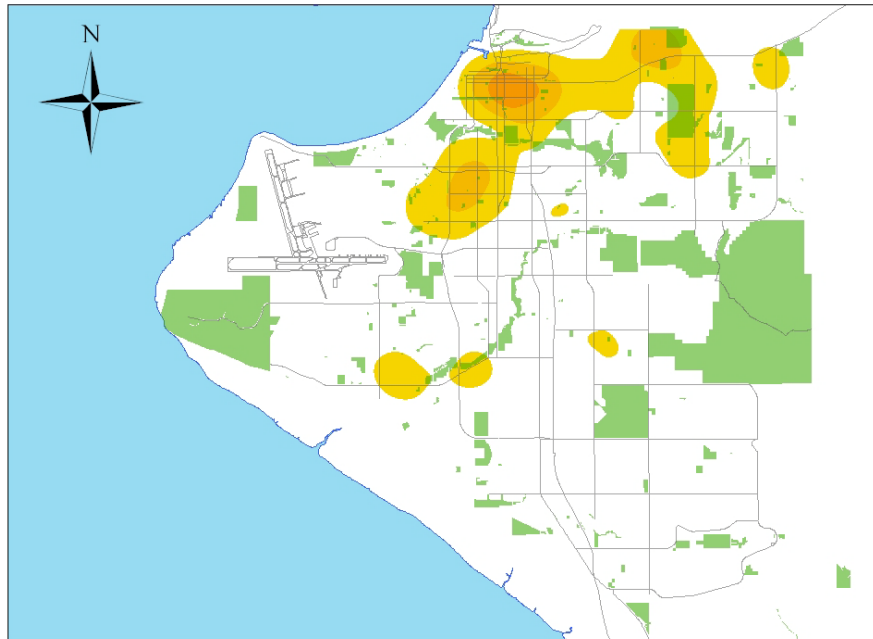
## Density of Assault Locations



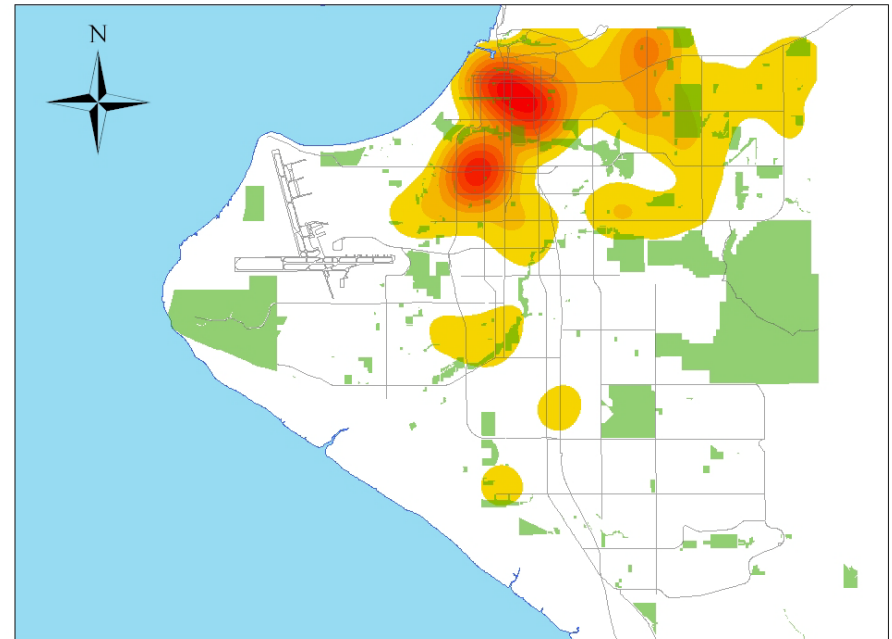
# Sexual Assault Densities by Age

LESS THAN 21

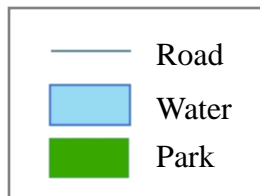
21 OR MORE



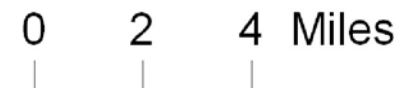
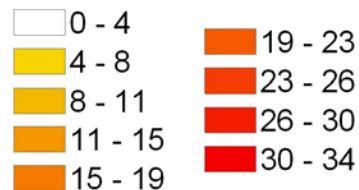
N=140



N=275

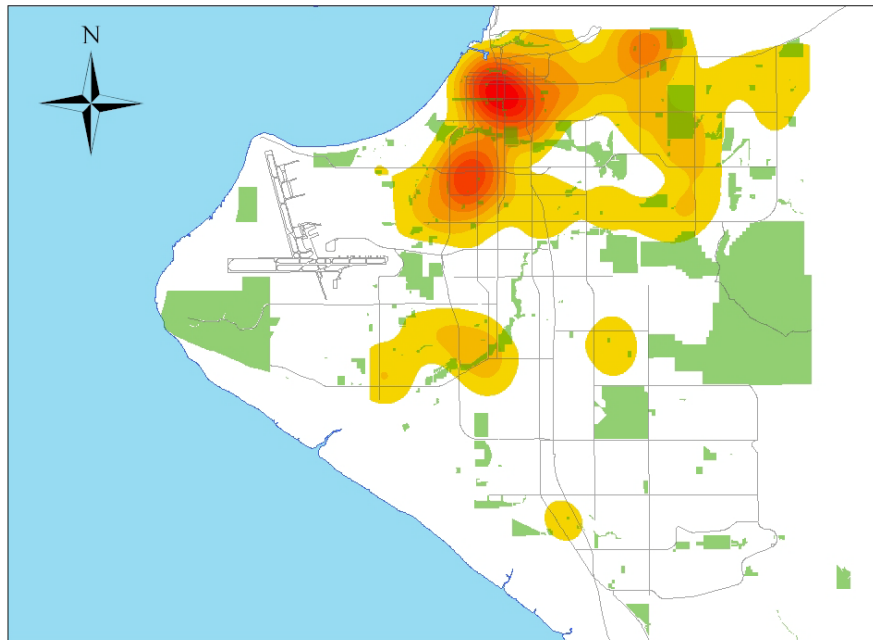


## Density of Assault Locations



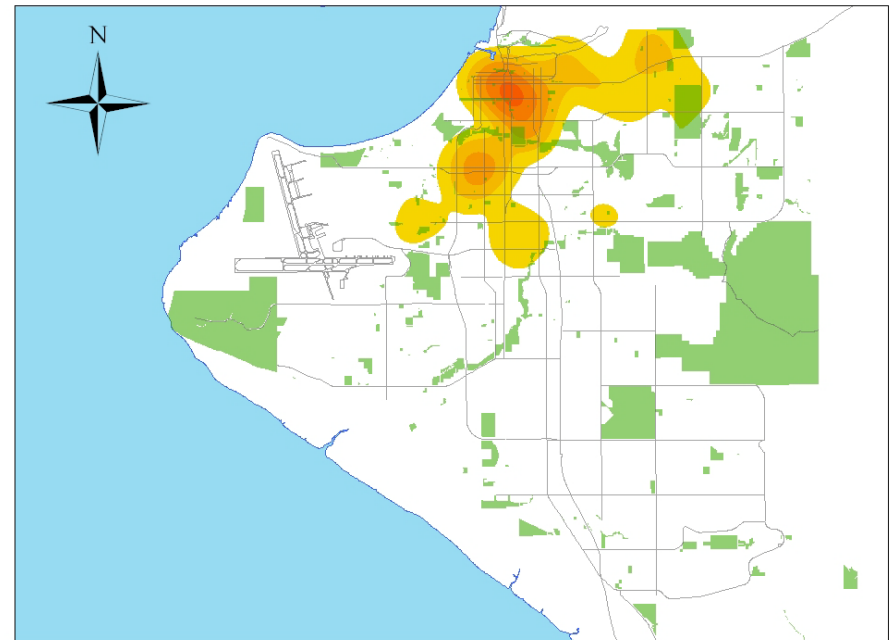
# Sexual Assault Densities by Relationship

## NON-STRANGER

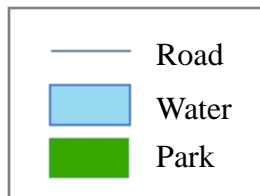


N=143

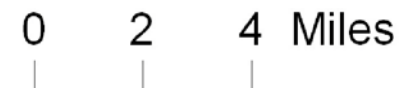
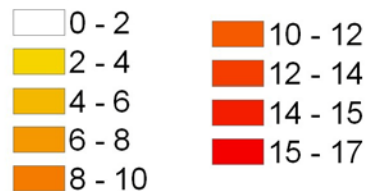
## STRANGER



N=68



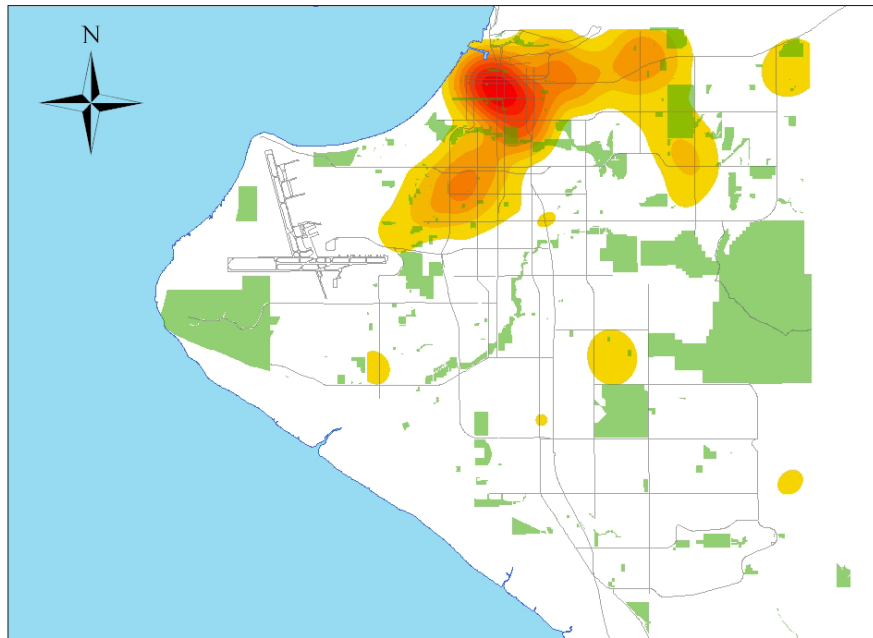
### Density of Assault Locations





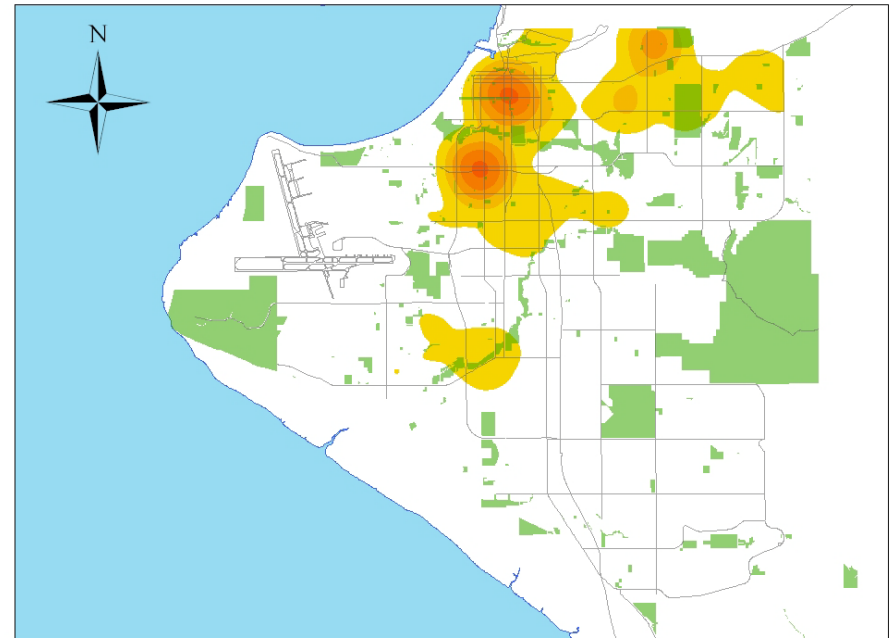
# Sexual Assault Densities by Alcohol Use

ALCOHOL

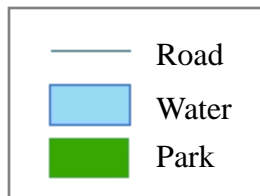


N=118

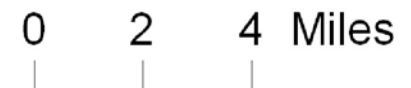
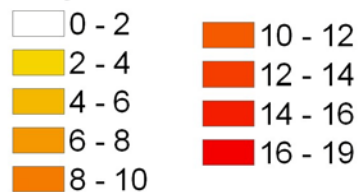
NO ALCOHOL



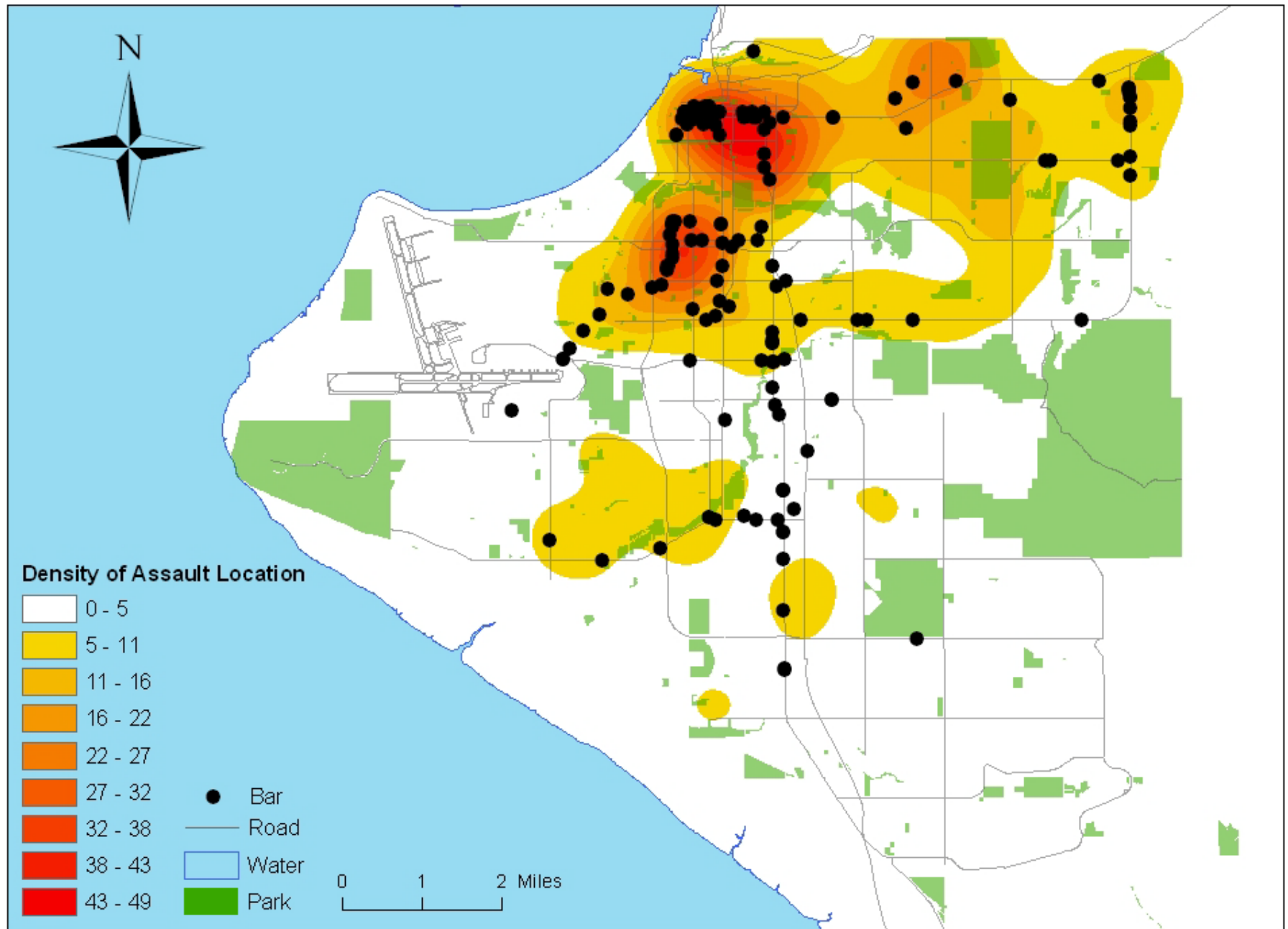
N=90



## Density of Assault Locations

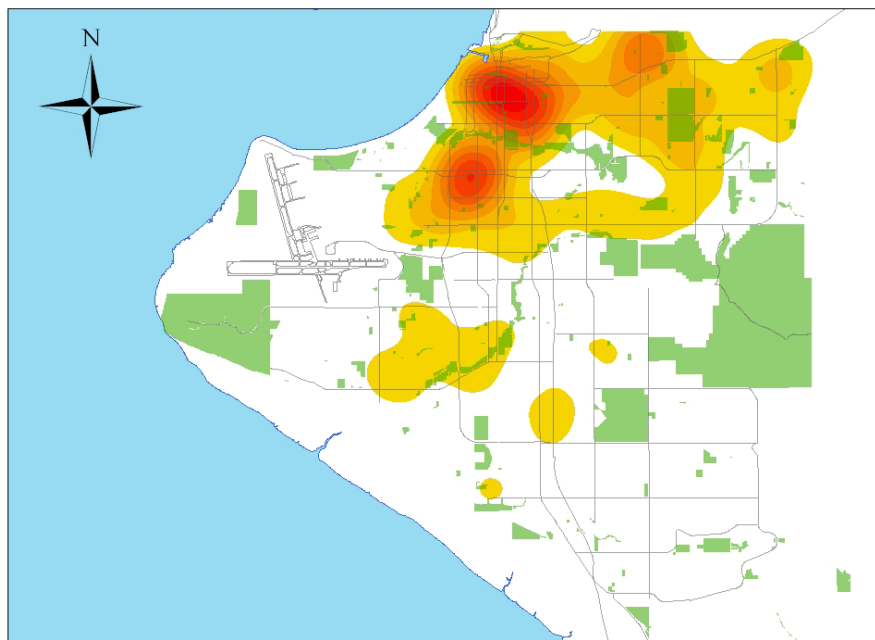


# Sexual Assault Densities and Bar Locations in Anchorage: 2000-2001



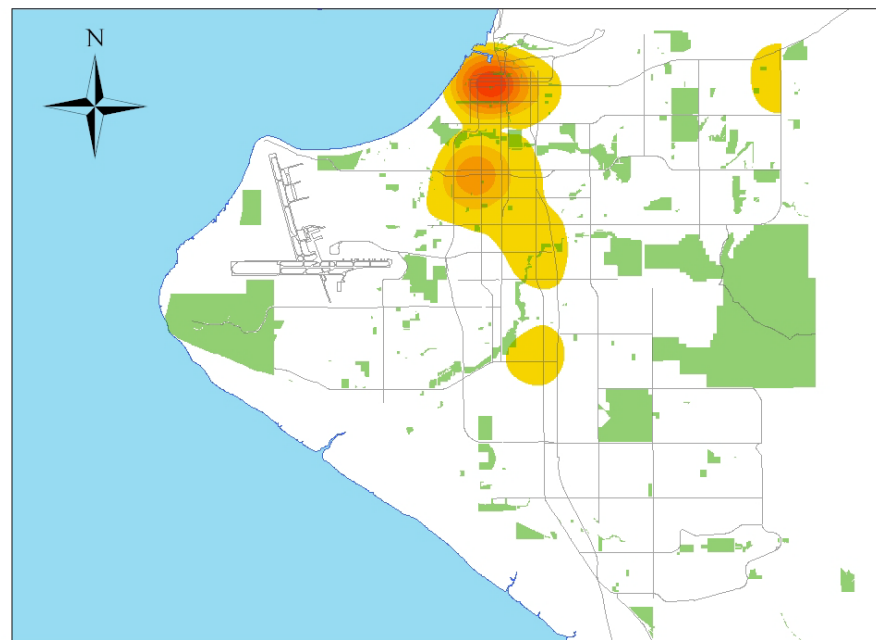
# Sexual Assault and Bar Densities

## SEXUAL ASSAULT

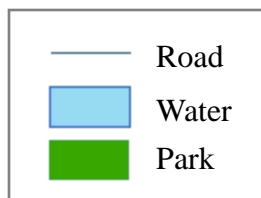


N=424

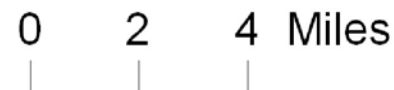
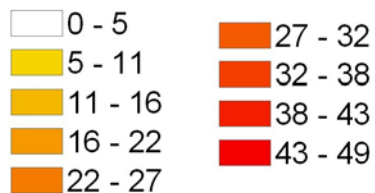
## BAR



N=155



### Density of Assault/Bar Locations



# Summary

**The epidemiology of sexual assault varies by geography.**

Most Typical Victim	Mt. View	Northeast
AGE	15-19	35-44
RACE	Native	White
RELATIONSHIP	Stranger	Non-Stranger
ALCOHOL USE	Yes	No

# Policy Implications

**Successful interventions must take into account geographical variations in the epidemiology of sexual assault.**

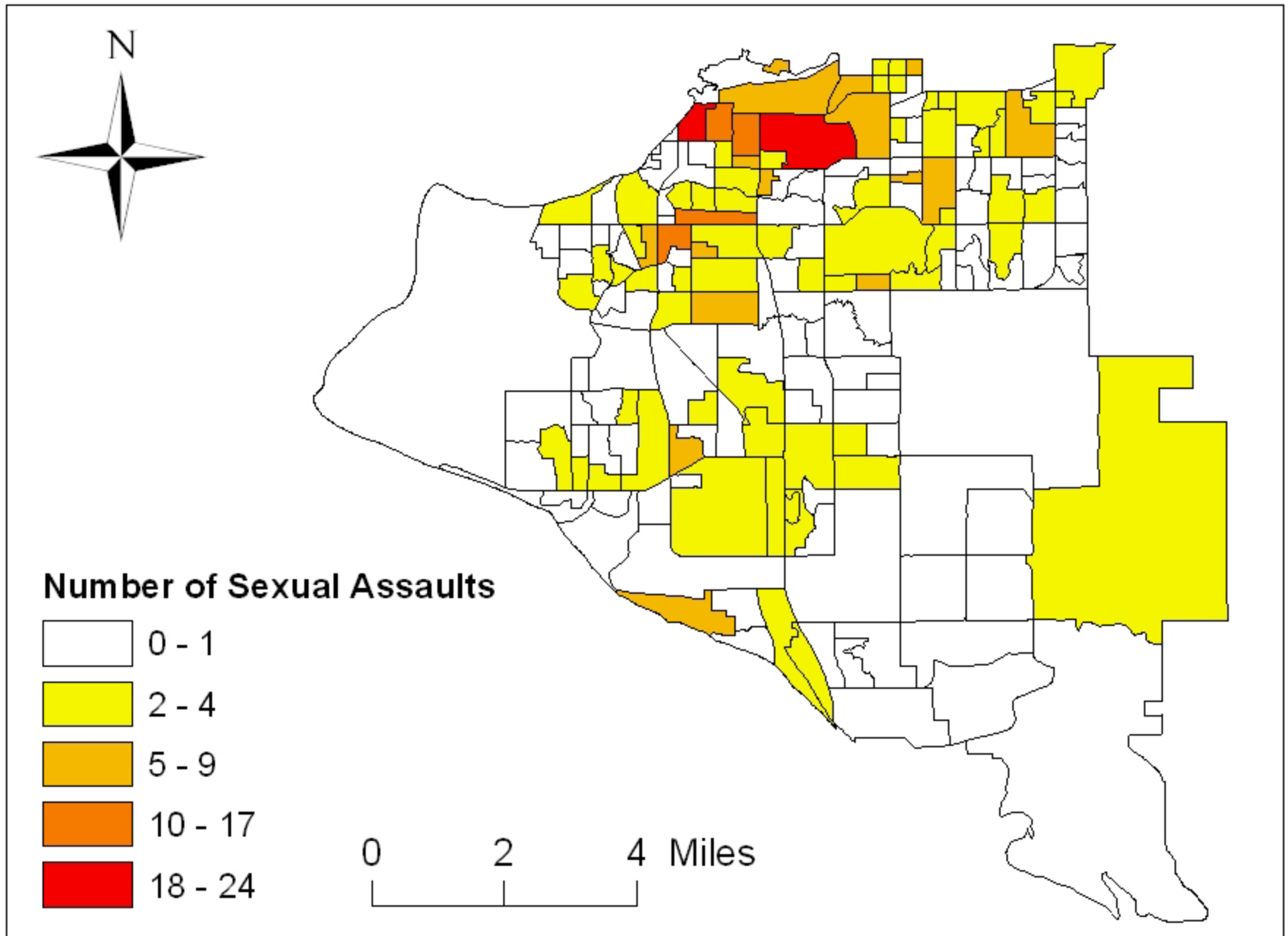
**Bars must be part of the intervention.**

# **Presentation Outline – Part II**

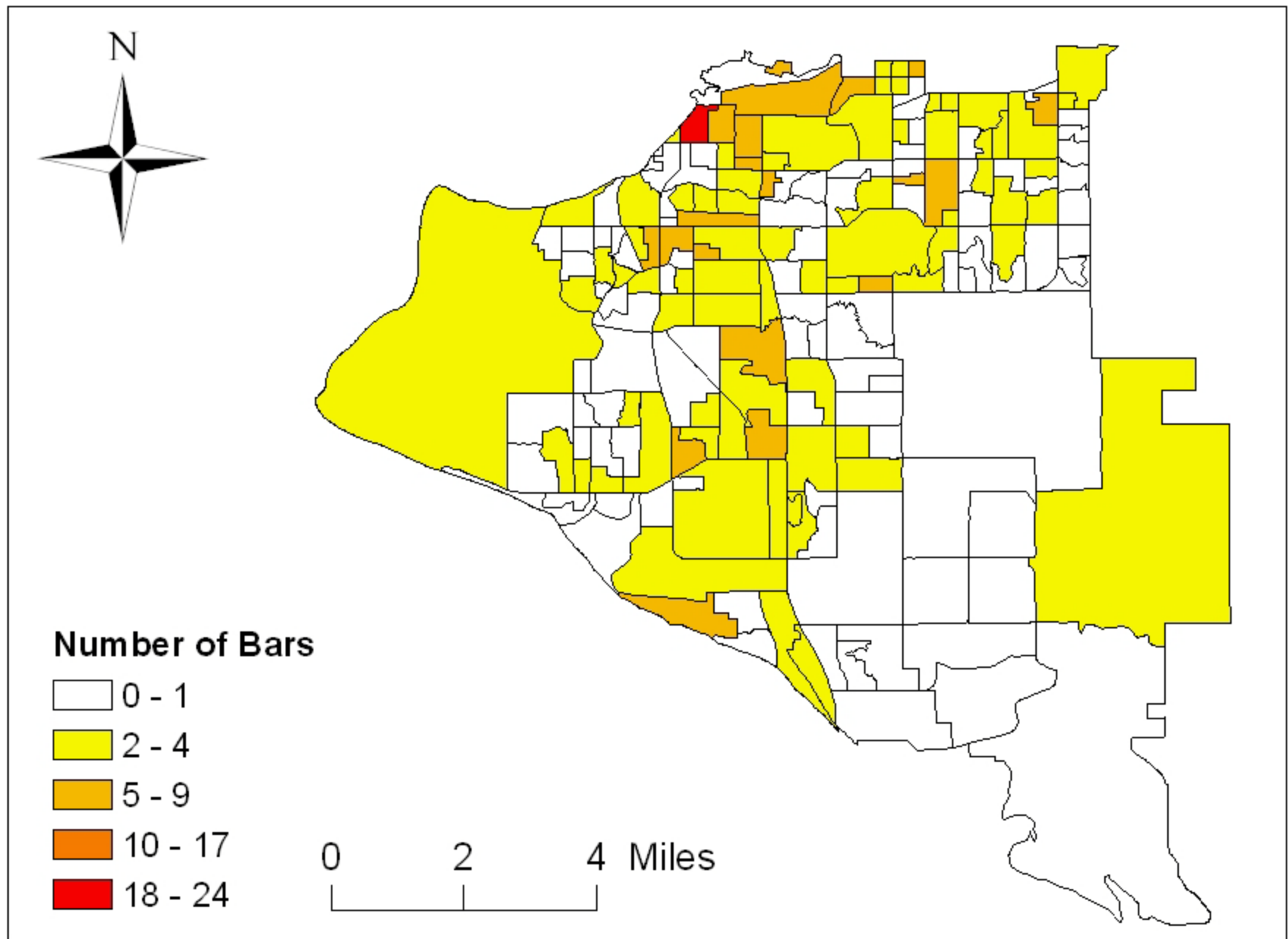
## **Exploratory Spatial Data Analysis**

- **Aggregating by census block group**
- **Box maps and plots**
- **Global spatial autocorrelation**
- **Local spatial autocorrelation**
- **Relationship between assault and bar locations**
- **Policy implications**

# Number of Sexual Assaults by Census Block Group: 2000-2001



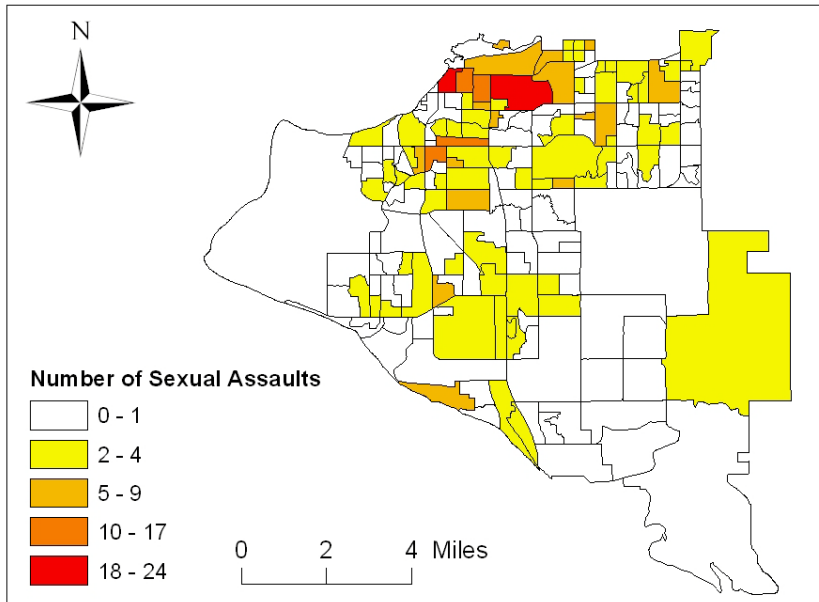
# Number of Bars by Census Block Group



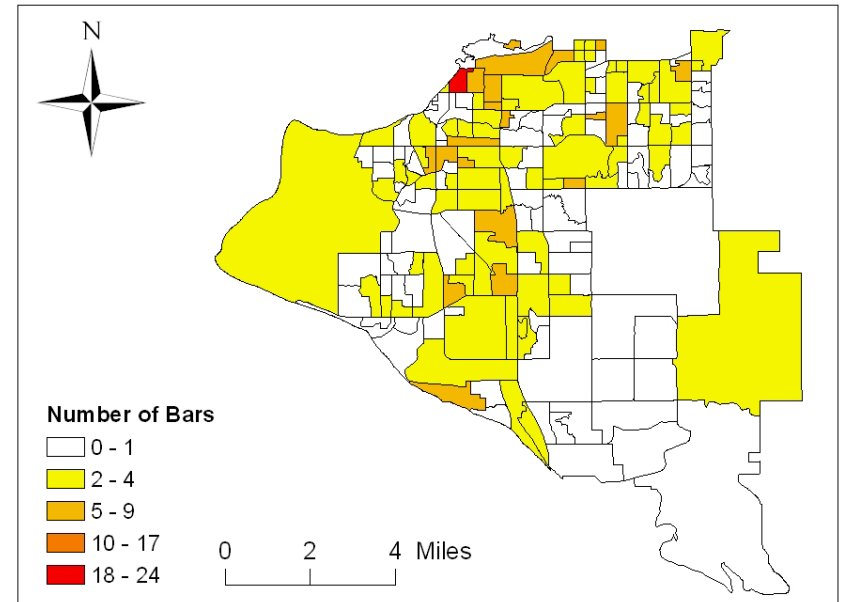


# Number of Sexual Assaults and Bars by Census Block Group

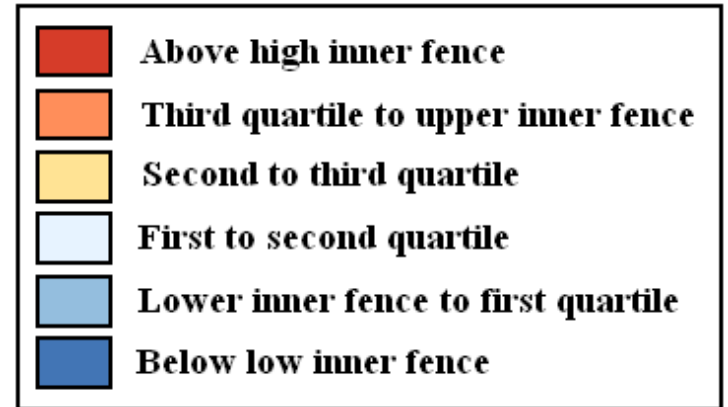
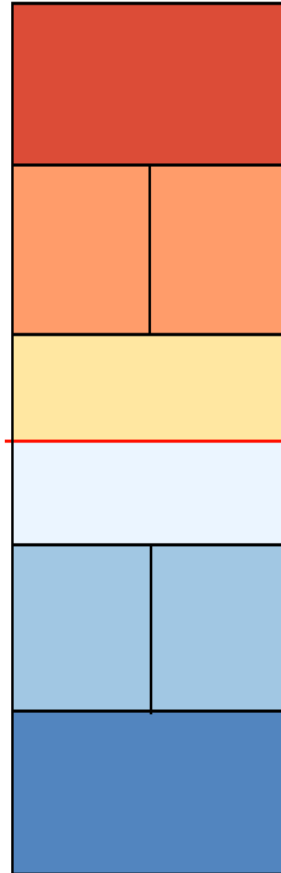
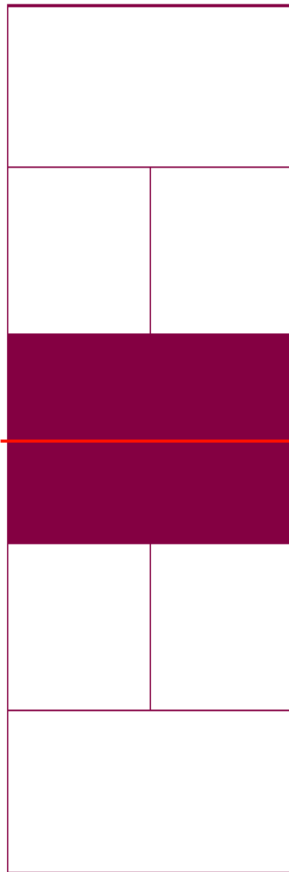
## SEXUAL ASSAULTS



## BARS



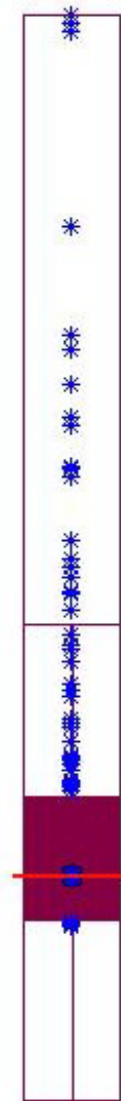
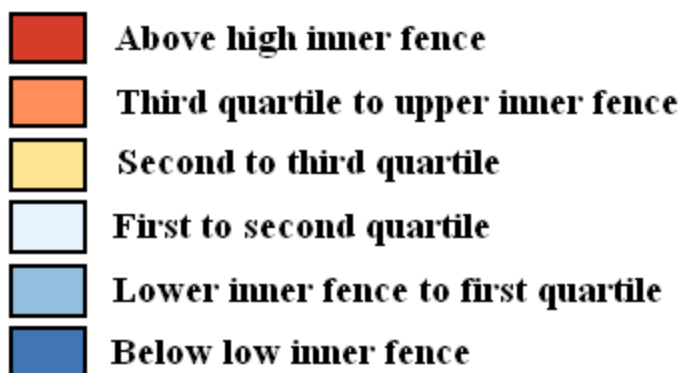
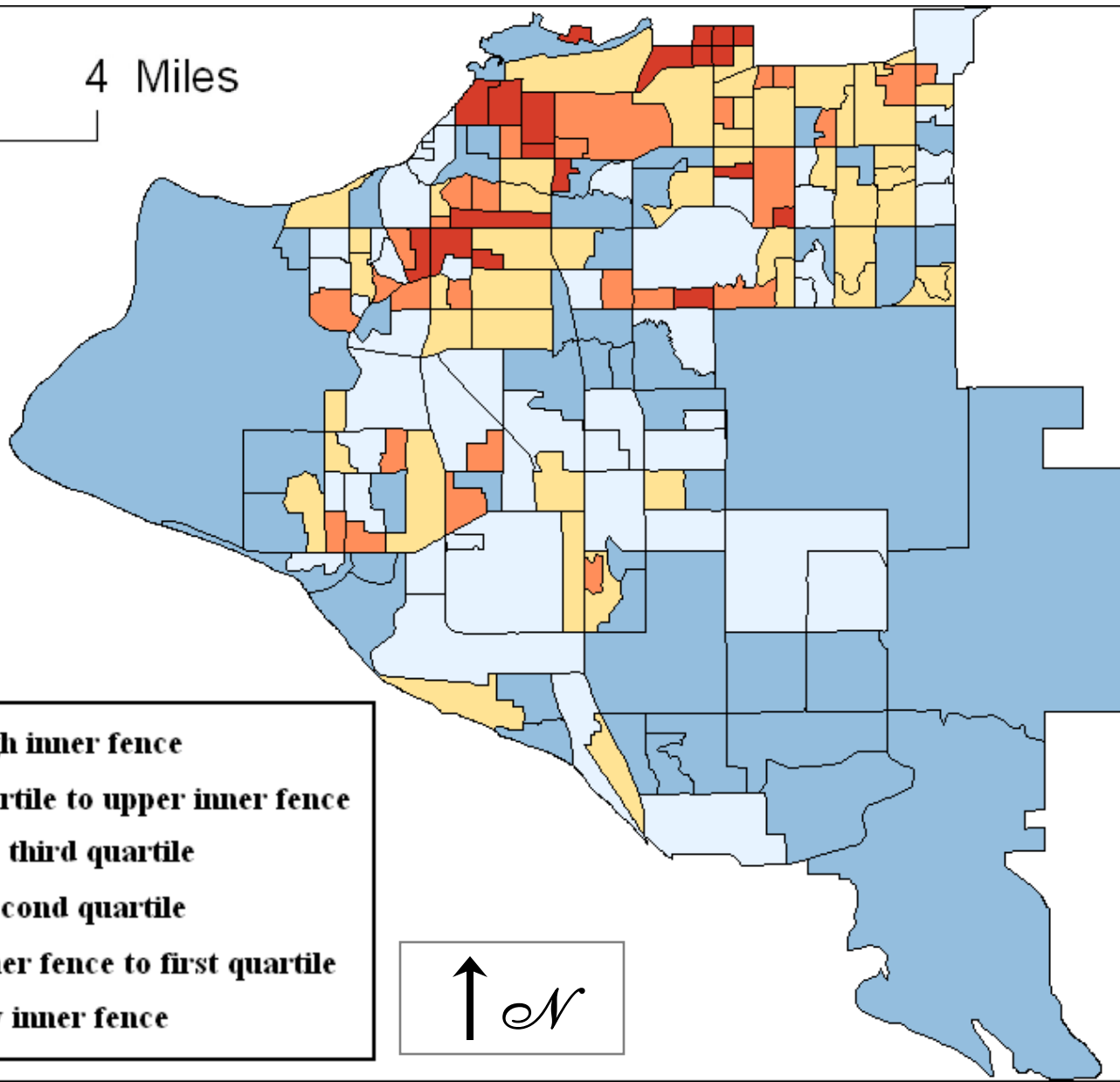
# BOX PLOT

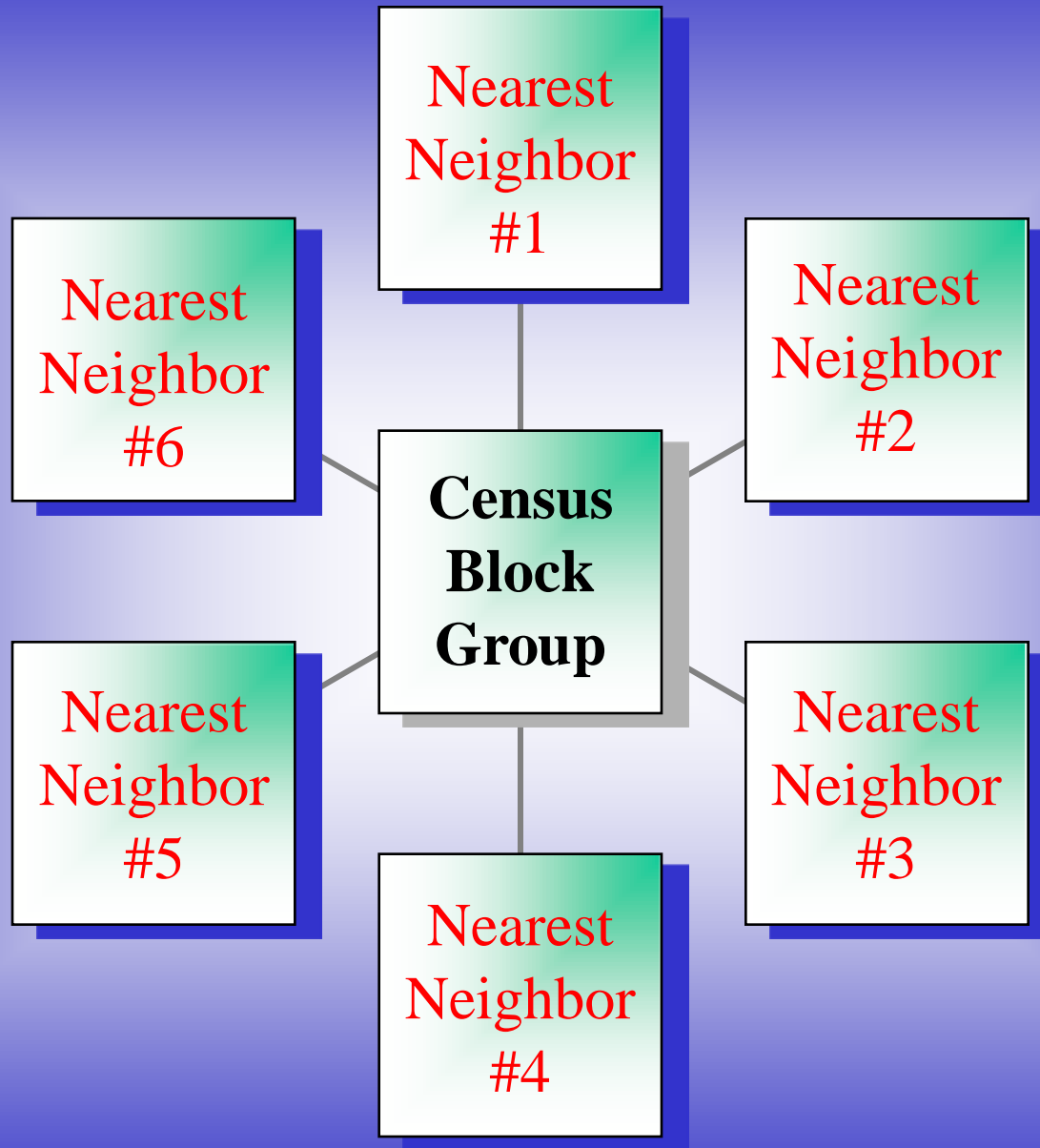


# BOX MAP

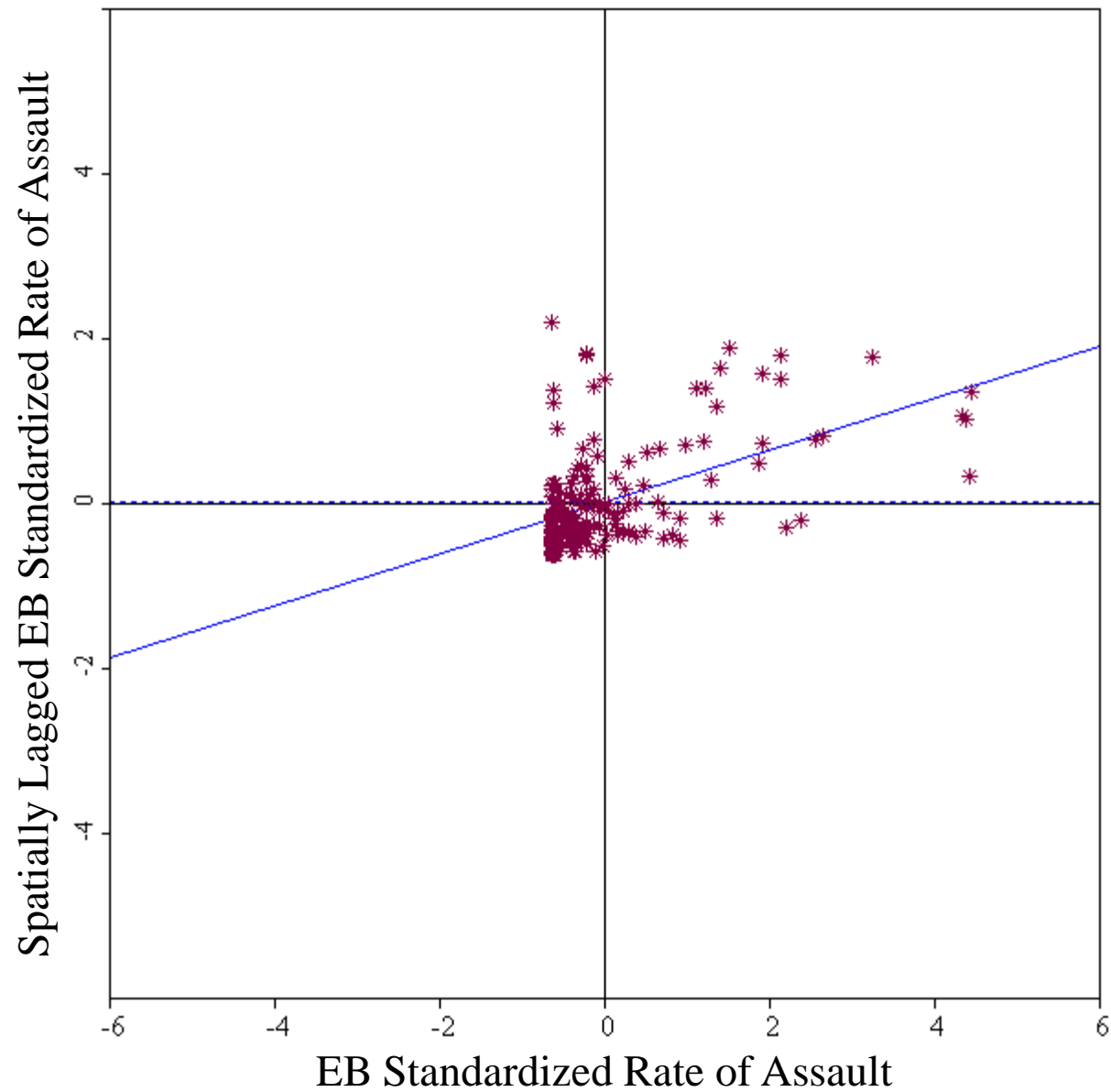
# EB Standardized Rate of Assault

0 2 4 Miles

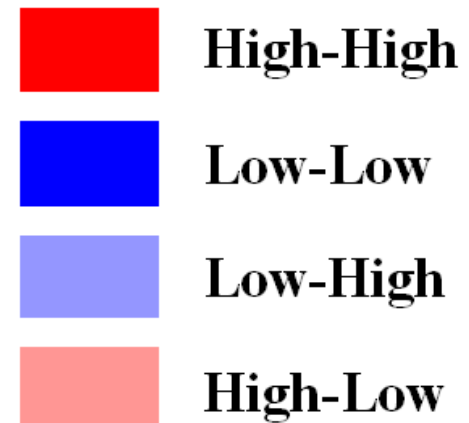
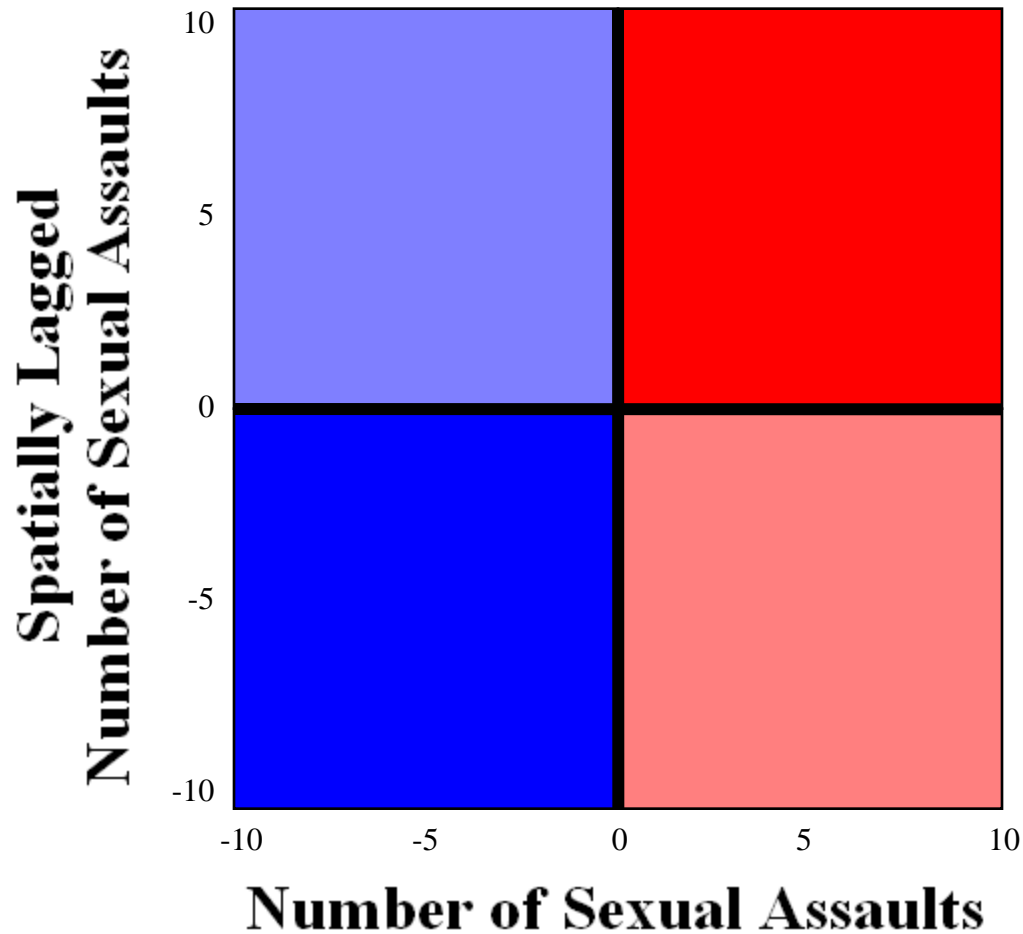




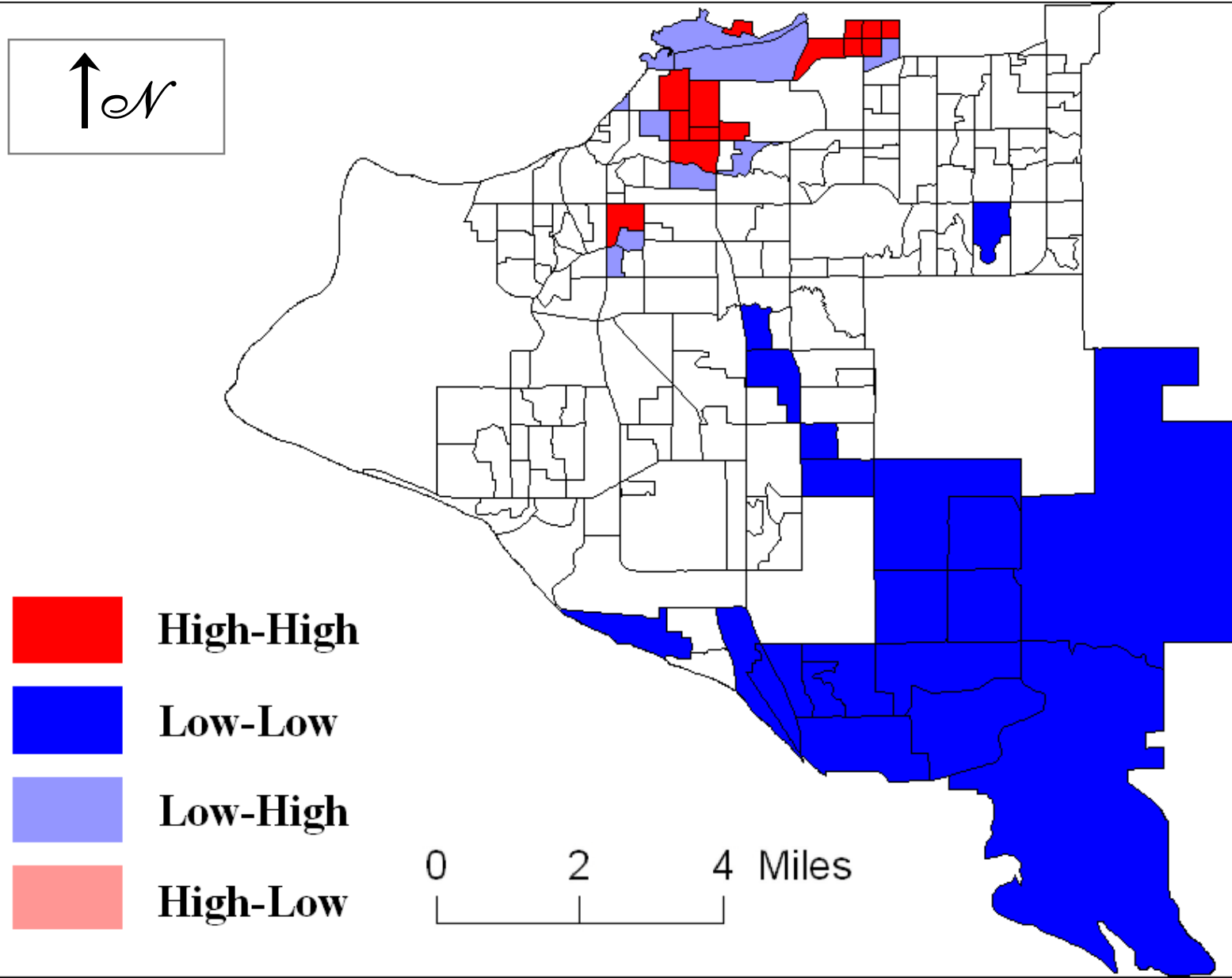
Moran's  $I = 0.3155$



# Cluster Map of Sexual Assault



# EB Standardized Rate of Assault

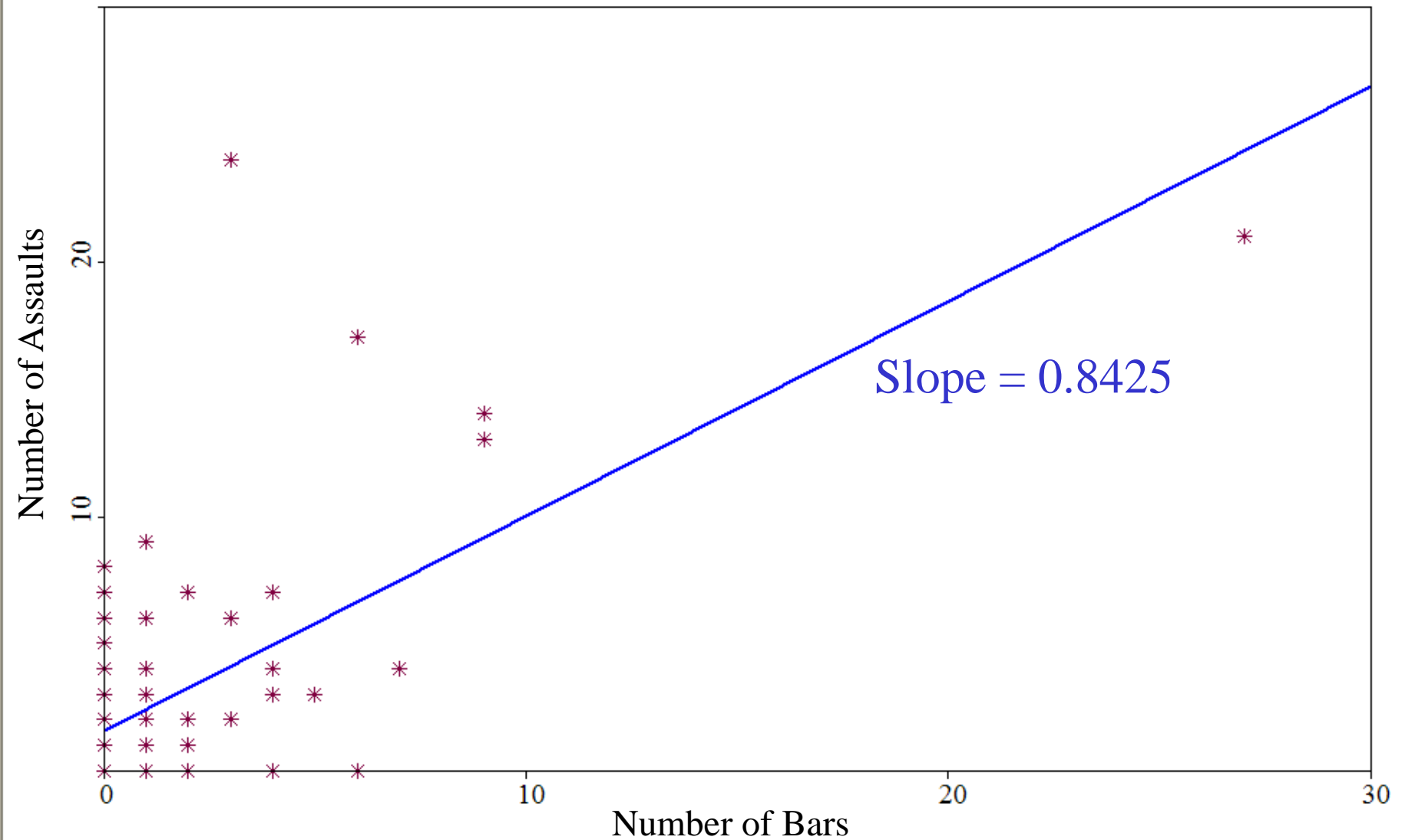


# **Relationship Between Assault and Bar Locations**

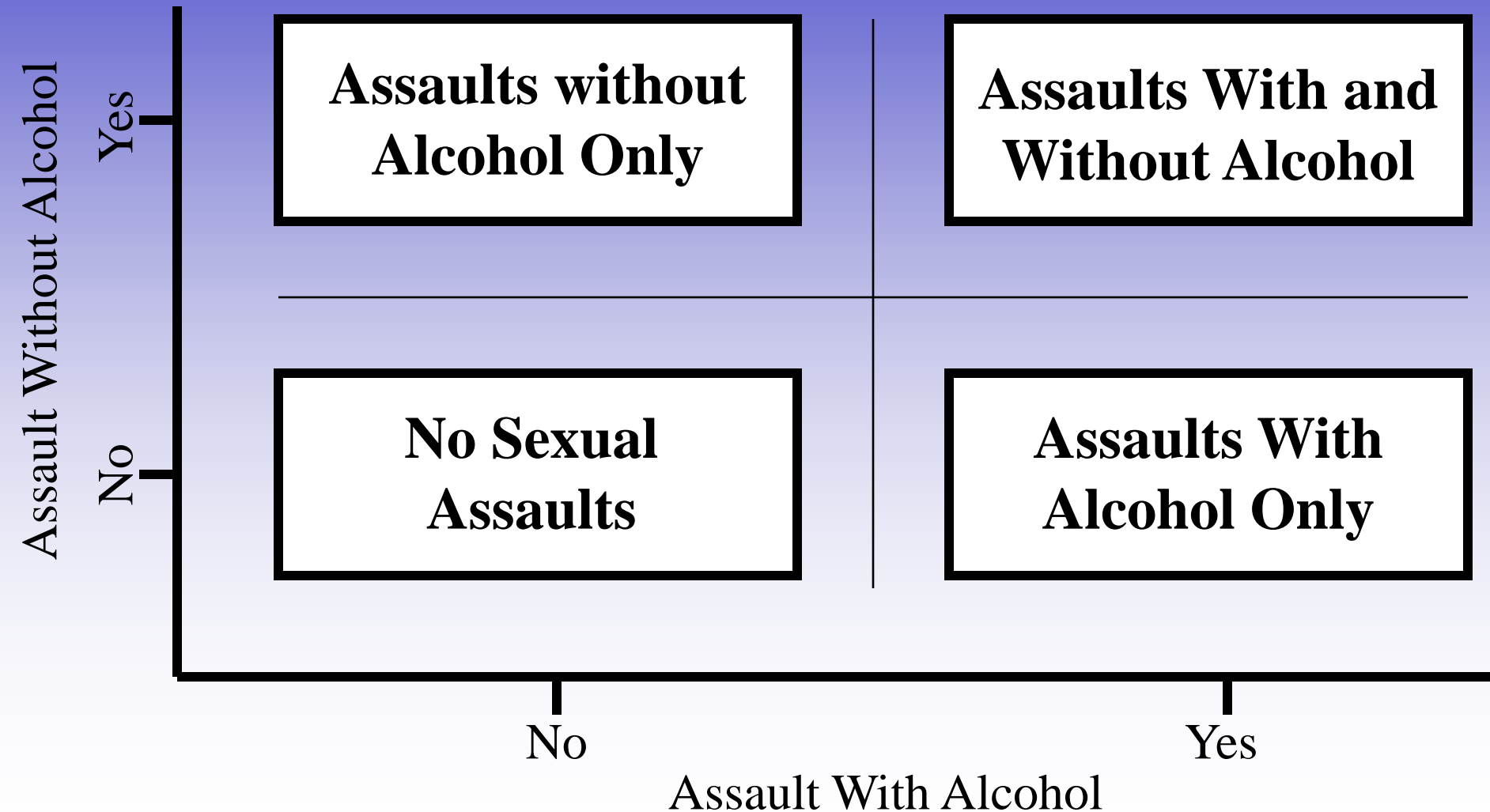
- **Scatterplot of assault and bar locations**
- **Conditional plots of bar locations**
- **Multivariate spatial autocorrelation**



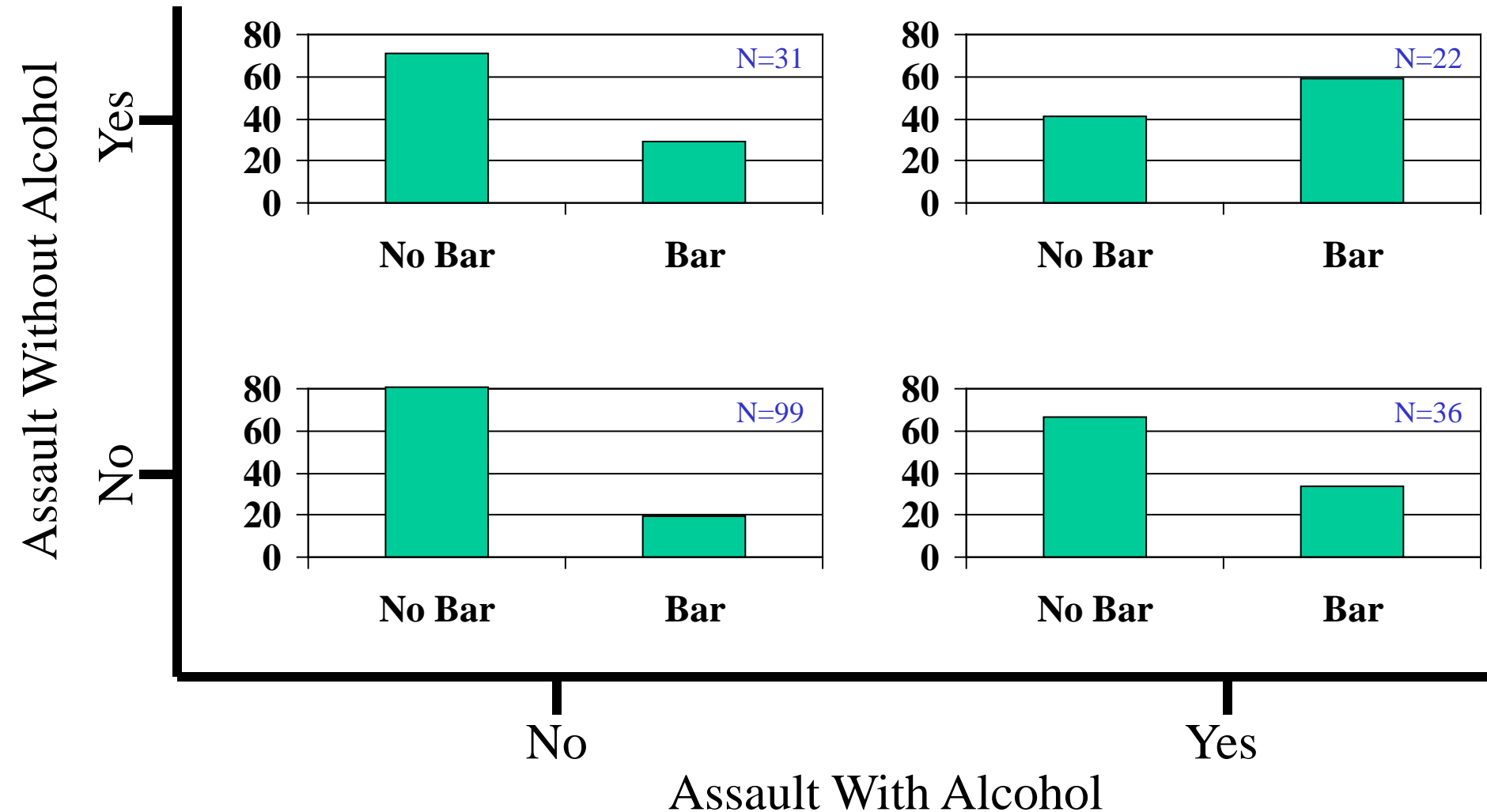
# Assault and Bar Locations



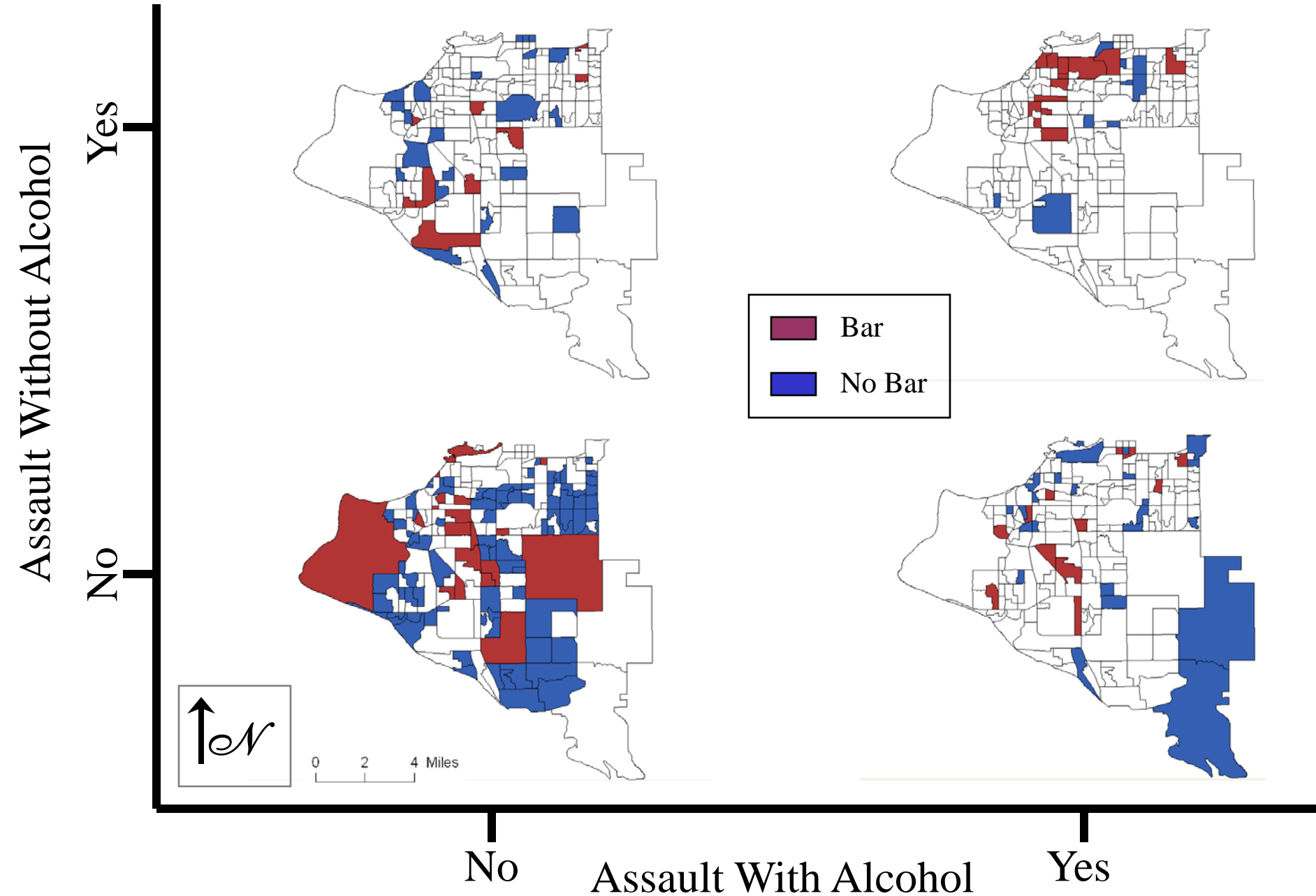
# Conditional Plots of Bar Locations

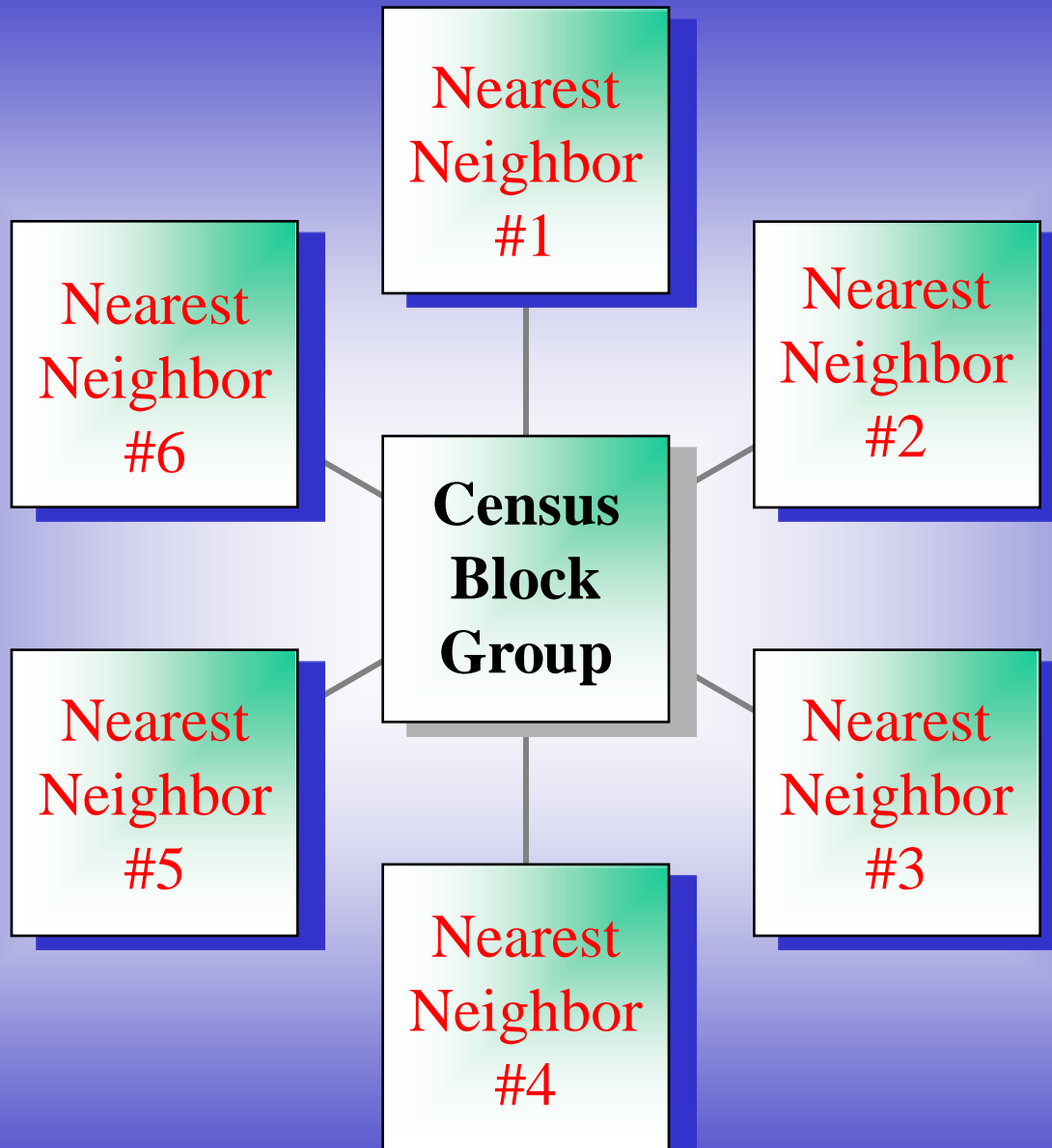


# Conditional Histograms of Bar Locations

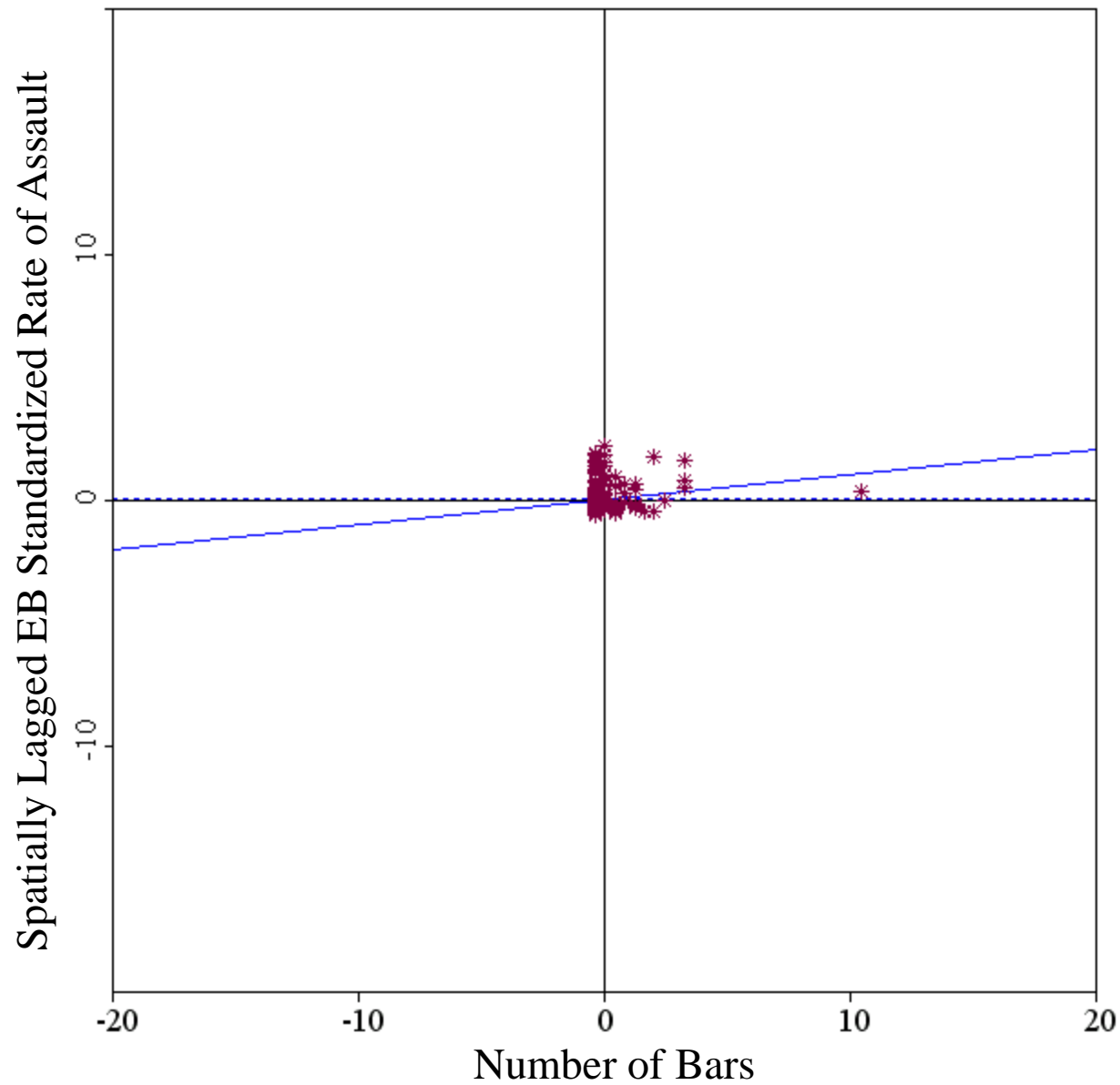


# Conditional Maps of Bar Locations

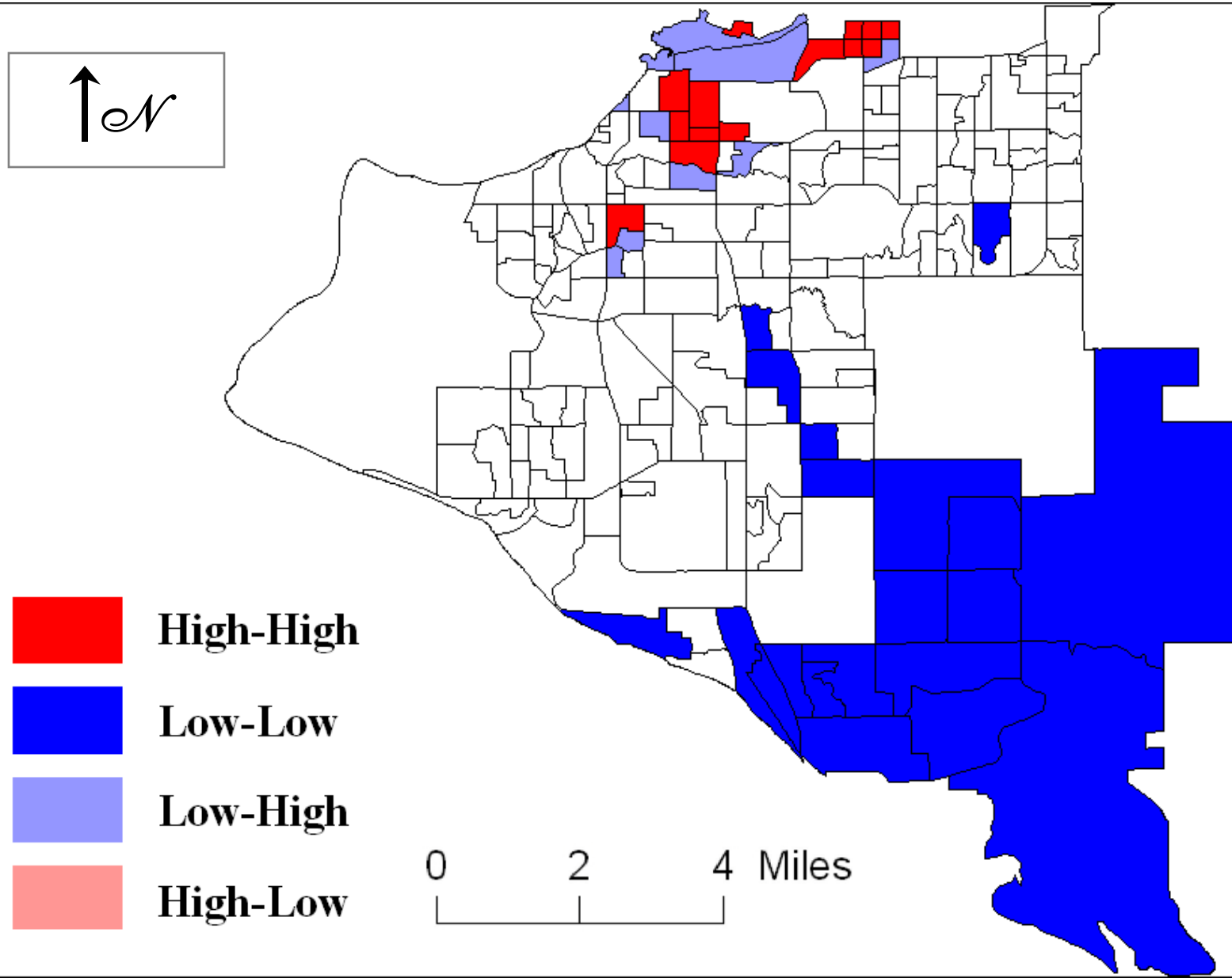




Moran's  $I = 0.1010$



# Multivariate LISA: Cluster Map



# **SUMMARY AND POLICY IMPLICATIONS**

- **There is a relationship between assault locations and bar locations. However,**
  - **Relationship between assault locations and bar locations is far from perfect.**
  - **Whether a causal mechanism exists remains unknown.**
- **Nonetheless, successful interventions must involve bars. Targeting bars, however, will be:**
  - **Inefficient, and**
  - **Insufficient.**